

### **Remarks**

Applicant respectfully requests reconsideration of this application as amended. Claims 1, 3, 6, 8, 9, 11, 15, 16, and 18-24 have been amended. No claims have been cancelled or added. Therefore, claims 1-24 are presented for examination.

### **Drawings**

The drawings have been objected to as failing to comply with 37 CFR §1/84(p)(5) because they include the following reference character(s) not mentioned in the description: fig. 1 element 111 and fig. 8 element 810. The specification has been amended to add the reference characters in compliance with 37 CFR §1.121(b). Therefore, applicant respectfully requests that the objection to the drawings be withdrawn.

### **35 U.S.C. §101 Rejection**

Claims 18-24 stand rejected under 35 U.S.C. §101 because the claimed invention is directed to non-statutory subject matter. Claims 18-24 have been amended to refer to “a machine-readable storage medium”. Even though the specification references carrier waves, this should not preclude claims to a machine-accessible storage medium. The claims should be interpreted to include the subject matter that is statutory. As such, the claimed invention is directed to statutory subject matter. Furthermore, the Office Action rejects the claims, but cites the specification. Thus, the basis of the rejection is improper. For the foregoing reasons, applicant respectfully requests the withdrawal of the 35 U.S.C. §101 rejection.

### 35 U.S.C. §103(a) Rejection

Claims 1, 2, and 7-24 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Shek et al. (*Dynamic Spatial...*) in view of Huang et al. (*A Spatial Clustering...*).

Applicant submits that the present claims are patentable over Shek in view of Huang.

Shek discloses a system for broadcast data dissemination in an Intelligent Mobile Information System. The Intelligent Mobile Information System supports information-centered applications that require support for a large number of distributed mobile users collaborating on a common mission and with interests in a common situation domain. Broadcast data dissemination is most effective when each broadcast information packet has multiple interested parties. To maximize the value of multicast dissemination, the system of Shek dynamically clusters similar user profiles into aggregate user classifications that are served by independent multicast channels of custom information packets. (Shek at Abstract.)

Huang discloses an approach that clusters mobile users before downlink beamforming and broadens beams within the beamforming calculation. First, the broadening beamforming scheme is investigated to alleviate inaccuracies in DOA estimation. Then, it is determined how to group the mobile users, with the constraint of separation angle, to enhance downlink beamforming. (Huang at Abstract.)

Claim 1, as amended, recites:

A method for beamforming in a wireless communication system, comprising:  
identifying one or more target(s) for which a communication signal is intended;  
identifying one or more other target(s) which may benefit from receipt of the communication signal; and  
developing a multi-lobe beampattern to transmit the communication signal to the intended target(s) and the identified one or more other target(s).

First, applicant submits that Shek in view of Huang does not disclose or suggest identifying one or more other target(s) which may benefit from receipt of the communication signal, as recited by claim 1. The Office Action states that Shek discloses this feature at the first paragraph of page 143, which states “[b]y taking into account of expected changes in user profiles, profile-oriented data dissemination achieves predictive information push that anticipates future user needs and minimizes latency of data request by making data available before they are explicitly requested.” (Office Action at pg. 3, pt. 5.) The Office Action reasons that “Shek identifies a target group for the communication signal and based upon movement of neighboring target groups, selects users who may find the information useful and send the information to both the intended recipients and the additional targets.” (Id., at pgs. 3-4, pt. 5.)

However, applicant fails to understand how the cited portion of Shek leads to the Office Action’s above-stated reasoning. The cited portion Shek actually implies that the future needs of a single group of users may be predicted and data may be made available to satisfy these predicted future needs without the group of users having to request it. This is not the same as identifying an entire other group of users that are predicted to benefit from a communication signal. In Shek, a user’s future needs as far as data requests are predicted, rather than predicting a new group of users that may benefit from a same communication signal sent to a first intended group of users.

Therefore, Shek does not disclose or suggest identifying one or more other target(s) which may benefit from receipt of the communication signal. Applicant further submits that Huang does not disclose or suggest such a feature. The Office Action does not rely on Huang to disclose this feature, and applicant can find no disclosure or suggestion of it

anywhere in Huang. As a result, Shek in view of Huang does not disclose or suggest the cited feature of claim 1, identifying one or more other target(s) which may benefit from receipt of the communication signal.

Second, applicant submits that Shek in view of Huang does not disclose or suggest developing a multi-lobe beampattern to transmit the communication signal to the intended target(s) and the identified one or more other target(s), as recited by claim 1. The Office Action acknowledges that “Shek does not disclose or suggest developing a multi-lobe beampattern to transmit the communication signal to the intended target(s) and the identified one or more other target(s).” (Id. at pg. 4, pt. 5.) However, the Office Action does cite Huang as disclosing this feature at page 193 and Figure 6 of Huang. (Id.)

However, applicant can find no disclosure or suggestion anywhere in Huang of developing a multi-lobe beampattern *to transmit the communication signal to multiple users*. Although Huang discusses grouping users into a cell for downlink beamforming and selective calculation for downlink beamforming weight for a group, Huang does not discuss developing a multi-lobe beam patterns to transmit a same communication signal to multiple targets. Applicant can find no disclosure or suggestion anywhere in Huang of the above-cited feature of claim 1. Therefore, Shek in view of Huang does not disclose or suggest developing a multi-lobe beampattern to transmit the communication signal to the intended target(s) and the identified one or more other target(s).

Therefore, due to the above reasons, claim 1, as well as its dependent claims is patentable over Shek in view of Huang. Independent claims 9 and 18 also recite, in part, identifying one or more other target(s) which may benefit from receipt of the communication signal and developing a multi-lobe beampattern to transmit the communication signal to the

intended target(s) and the identified one or more other target(s). Therefore, claims 9 and 18, as well as their respective dependent claims, are patentable over Shek in view of Huang for the reasons discussed above with respect to claim 1.

Claims 3-6 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Shek in view of Huang, and further in view of Gleeson (U.S. Patent No. 6,477,160). Applicant submits that the present claims are patentable over Shek and Huang, even in view of Gleeson. Claims 3-6 depend from independent claim 1. As discussed above, independent claim 1 is patentable over Shek in view of Huang. Gleeson does not remedy the defects of Shek and Huang in light of claim 1. Therefore, claims 3-6 are patentable over Shek and Huang, in view of Gleeson.

Applicant respectfully submits that the rejections have been overcome and that the claims are in condition for allowance. Accordingly, applicant respectfully requests the rejections be withdrawn and the claims be allowed.

The Examiner is requested to call the undersigned at (303) 740-1980 if there remains any issue with allowance of the case.


Applicant respectfully petitions for an extension of time to respond to the outstanding Office Action pursuant to 37 C.F.R. § 1.136(a) should one be necessary. Please charge our Deposit Account No. 02-2666 to cover the necessary fee under 37 C.F.R. § 1.17(a) for such an extension.

Please charge any shortage to our Deposit Account No. 02-2666.

Respectfully submitted,

BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP

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Ashley R. Ott  
Reg. No. 55,515

12400 Wilshire Boulevard  
7<sup>th</sup> Floor  
Los Angeles, California 90025-1026  
(303) 740-1980